

Early Pleistocene hominins in Europe: the sites of Barranco León and Fuente Nueva-3 (Orce, Spain)

M. Patrocinio Espigares¹, Paul Palmqvist¹, Sergio Ros-Montoya¹, Juan Manuel Jiménez-Arenas², Leticia Menéndez³, Robert Sala³, Bienvenido Martínez-Navarro^{3,4}

1 - Universidad de Málaga, 2 - Universidad de Granada, 3 - Institut Català de Paleoeologia Humana i Evolució Social-IPHES. 4 - ICREA, Barcelona, Spain

The Early Pleistocene (Late Villafranchian) sites of Orce, placed in the northeastern sector of the Guadix-Baza Basin (Granada, southeastern Spain), are key to the study of the first human settlements in the European subcontinent.

Evidence of human presence and anthropic activity has been found at two sites, Barranco León and Fuente Nueva-3.

In this sedimentary basin, the hominins inhabited a mild environment rich in vegetation, which provided all resources necessary for their living, including the presence of a lake with a permanent water sheet fed by thermal springs and abundant ungulate carcasses. However, these animal resources were also focus of attention for scavenging carnivores.

In Barranco León, with a chronology of 1.4 Ma, and slightly older than Fuente Nueva-3, 1.3 Ma, a deciduous tooth of *Homo* sp. has been unearthed in 2002 [1] and a huge assemblage of Oldowan (i. e. Mode 1) tools, made in flint and limestones, have been recovered in both localities. In addition, evidences of human modification are frequent on the bone surfaces, as cut-marks, resulting from disarticulation, defleshing and evisceration activities, and percussion marks that evidence bone fracturing for accessing marrow contents.

Cut marks are mostly present on large ungulates limb bones, although a number of axial elements, as rib and vertebrae fragments, show cut marked surfaces. Percussion evidences are located almost exclusively in appendicular elements.

Carnivores activities are present too, and are focused, as cut marks, on limb bones. These modifications were mostly originated by the giant, short-faced hyena of African origin *Pachycrocuta brevirostris*, although the study of the fossil bones from the last four dig seasons evidence the presence of tooth marks from other carnivores of smaller body size.

In any case, anthropic activity predominates in both, Barranco León and Fuente Nueva-3, which suggest a secondary access of carnivores to these areas.

However, the upper archaeological level of Fuente Nueva-3, which has provided 150 coprolites and several tooth remains of *P. brevirostris*, is an exception to the pattern of competitive exclusion depicted above for hominins and scavenging carnivores. Taphonomic analysis of ungulate postcranial remains preserved in this level has shown increased carnivorous activity, thus evidencing a possible competition for ungulate carcasses between *Homo* and *Pachycrocuta*

This work has been done in the framework of the contract Exp. B090678SV18BC funded and authorized by Consejería de Cultura de la Junta de Andalucía, and the project P11-HUM-7248 by Junta de Andalucía

References:[1] Toro-Moyano, I., Martínez-Navarro, B., Agustí, J., Souday, C., Bermúdez De Castro, J.M., Martín-Torres, M., Fajardo, B., Duval, M., Falguères, C., Oms, O., Parés, J.M., Anadón, P., Julià, R., García-Aguilar, J.M., Moigne, A.-M., Espigares, M.P., Ros-Montoya, S., Palmqvist, P., 2013. The oldest human fossil in Europe, from Orce (Spain). *Journal of Human Evolution*, 65, 1-9.[2] Espigares, M.P., Martínez-Navarro, B., Palmqvist, P., Ros-Montoya, S., Toro, I., Agustí, J., Sala, R., 2013. *Homo* vs. *Pachycrocuta*: Earliest evidence of competition for an elephant carcass between scavengers at Fuente Nueva-3 (Orce, Spain). *Quaternary International*. 295, 113 -125.

EARLY PLEISTOCENE HOMININS IN EUROPE: THE SITES OF BARRANCO LEÓN AND FUENTE NUEVA-3 (ORCE, SPAIN)

MARÍA-PATROCINIO ESPIGARES¹, PAUL PALMQVIST¹, SERGIO ROS-MONTOYA¹,
JUAN MANUEL JIMÉNEZ-ARENAS², LETICIA MENÉNDEZ³, ROBERT SALA³, BIENVENIDO MARTÍNEZ-NAVARRO^{3,4}

¹ Departamento de Ecología y Geología, Universidad de Málaga, Spain; ² Departamento de Prehistoria y Arqueología, Universidad de Granada, Spain;

³ Institut Català de Paleontologia Humana i Evolució Social-IPHES, Universitat Rovira i Virgili, Tarragona, Spain.; ⁴ ICREA, Barcelona, Spain

The Early Pleistocene (Late Villafranchian) sites of Orce, placed in the northeastern sector of the Guadix-Baza Basin (Granada, southeastern Spain), are key to the study of the first human settlements in the European subcontinent. Evidence of human presence and anthropic activity has been found at two sites, Barranco León and Fuente Nueva-3.



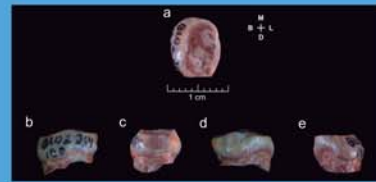
Barranco León

Fuente Nueva-3

Evidences of human modification are frequent on the bone surfaces, as cut-marks, resulting from skinning, disarticulation, defleshing and evisceration activities, and percussion marks that evidence bone fracturing for accessing marrow contents.

Cut marks are mostly present on large ungulates limb bones, although a number of axial elements, as rib and vertebrae fragments, show cut marked surfaces. Percussion evidences are located almost exclusively in appendicular elements.

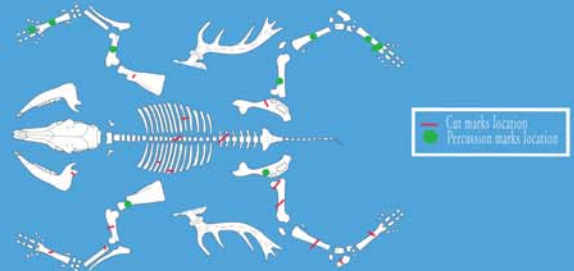
In Barranco León, (~1.4 Ma.), slightly older than Fuente Nueva-3, (~1.3 Ma.), a deciduous tooth of *Homo* sp. has been unearthed in 2002. (Toro-Moyano et al., 2013) and a huge assemblage of Oldowan (i. e. Mode 1) tools, made in flint and limestones, have been recovered in both localities.



Deciduous tooth of *Homo* sp. from Barranco León



Lithics artifacts



— Cut marks location
— Percussion marks location



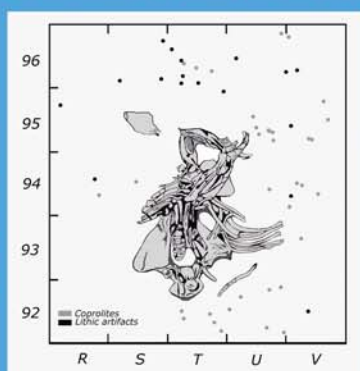
Fuente Nueva-3



Barranco León

Carnivores' modifications were mostly originated by the giant, short-faced hyena of African origin *Pachycrocuta brevirostris*. In any case, anthropic activity predominates in both, Barranco León and Fuente Nueva-3, which suggest a secondary access of carnivores to these areas.

However, taphonomic analysis of ungulate postcranial remains preserved in upper level of Fuente Nueva-3 has shown increased carnivorous activity, thus evidencing a possible competition for ungulate carcasses between *Homo* and *Pachycrocuta* (Espigares et al., 2013).



Coprolites and lithic artifacts surrounding an elephant carcass in the Upper level of Fuente Nueva-3



In the Guadix-Baza basin, the hominins inhabited a mild environment rich in vegetation, which provided all resources necessary for their living

Landscape reconstruction for Orce Sites (M. Antón)

REFERENCES

- Espigares, M.P., Martínez-Navarro, B., Palmqvist, P., Ros-Montoya, S., Toro, I., Agustí, J., Sala, R., 2013. Homo vs. Pachycrocuta: Earliest evidence of competition for an elephant carcass between scavengers at Fuente Nueva-3 (Orce, Spain). *Quaternary International* 295: 113-125.
- Helmer, M., 1987. Fiches d'ostéologie animale pour l'archéologie, SérieB: mammifères, n° 1, CNRS/ADPCA, Fig. 3
- Toro-Moyano, I., Martínez-Navarro, B., Agustí, J., Souday, C., Bermúdez de Castro, J.M., Martínón-Torres, M., Fajardo, B., Duval, M., Falguères, C., Oms, O., Parés, J.M., Anadón, P., Juliá, R., García-Aguilar, J.M., Moigne, A.M., Espigares, M.P., Ros-Montoya, S., Palmqvist, P., 2013. The oldest human remain in Europe: from Orce (Spain). *Journal of Human Evolution*, 65: 1-9.